(the sign used for this day is the bee sting), there is evidently a connection between *ymix*, *ik*, *caban*, and *cauac*, whose components are all more or less associated with, or composed of, the bee and honey signs.

When I speak of the components of a glyph it may be that an example will make this more readily understood. Take the day-sign *manik*. We have in this glyph, as represented by Landa, four components; the first is the glyph not unlike a carpenter's T-square which has the phonetic value of *ma;* near it to the right are three short lines which = *n;* and below to the left is the *ich* or *ix* glyph, which gives us, together with the others, "Ma-n-ich" — an excellent suggestion of Manik. The day-sign, *chicchan*, was represented by a pot, the base of which was crossed by hatchings giving the phonetic value *x;* the white space at the end of this divides the hatching from a black line, to which tooth-like processes are attached, giving the phonetic value of "*há-ch.*" We now have *x* or *sh*, which, joined to *há*, = *xá;* placing *ch* before this we obtain "*ch*-xa" — the suggestion of "Chi-xa" or "chicchan." The hieroglyph of the day-sign *Ahau* contains as components the á glyph, from which perpendicular lines mount to the top of the circle enclosing them. The straight lines = *há*, and the two small round circles on either side of the há = oo, giving us "Ah-há-oo" or "Ahau." The phonetic components of Landa's B are simply expressed by conventionalized footmarks = *be* in Maya; and when Landa asked for *bay* (the way he pronounced it in Spanish), the Maya scribe jotted down representations of footprints which recalled to him the sound of the name of the thing represented — in other words *be* — pronounced bā in Maya.

I believe the standard of phoneticism in these old Maya glyphs to be about the same as the more advanced system of writing used by the Nahuatalacs, and described by M. Aubin. The phonetics of some of the Maya day signs are quite obscure, others quite clear and easily interpreted.

The scientific world is already coznizant of the painstaking labors of Professor Cyrus W. Thomas of the Bureau of Ethnology, and his researches upon the Codex Troano are of inestimable value. I have recently had the pleasure of working in conjunction with Dr. Thomas as a member of the staff of the above-named institution, and I am convinced that his alphabet is based upon a solid foundation. Although we are both working by independent methods of research, like results have been obtained in several cases by repeated tests. His recent publication in *Science* adds other similarities of interpretation; surely this correspondence of results cannot be the result of accident. Dr. D. G. Brinton, Professor of American linguistics and archæology in the University of Pennsylvania, in a recent letter, says, "The correspondence between your interpretations and that of Professor Thomas in certain cases is strong *prima facie* evidence that both methods are based on correct principles." I have but to repeat Dr. Thomas's words "that this agreement in our conclusions . . . serves to strengthen both in the conviction that we are making genuine progress in the solution of this difficult problem."

"THE Optics of Photography and Photographic Lenses," by J. Traill Taylor, editor of the *British Journal of Photography*, is a useful little volume for those who desire to master the optical principles involved in the construction of photographic lenses. The work is also of value to the practical photographer, as it gives directions for the proper use of diaphragms, for the testing of lenses, etc.

LETTERS TO THE EDITOR.

**** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

On request in advance, one hundred copies of the number containing his communication will be furnished free to any correspondent.

The editor will be glad to publish any queries consonant with the character of the journal.

The English Sparrow and Other Birds.

I HAVE often read accounts of the English sparrow driving out our native birds, and for several years have been watching closely to see what the truth is; and from my observations I must conclude that many persons write facts from imagination.

That matters may be better understood, I may state that for twenty-three years I have lived on Ohio Street, the principal business street of the city, between 9th and 10th streets; this being near the centre of the city, the business buildings extending on Ohio Street half-way between 7th and 8th streets, and the residences having considerable ground around them, with many shade trees from fifteen to twenty-five years old.

The English sparrow came to Sedalia about twelve years ago, and for a long time did not get away from the vicinity of the business centre. Some five or six years ago, during a severe winter, I saw them one time only as far out on Ohio Street as Broadway or 8th Street, to which point they had come hunting something to eat on the street. The following summer they were frequently seen on the block between Broadway and 9th Street, but came into my yard only a few times. The following summer they were frequently in the yard, but made no nests. Since that time they have built their nests in the yard, and have fed in large numbers in the chicken-yard.

The trees are now large enough and dense enough to furnish protection for birds, and of late years more kinds are found in the city than formerly. The blue jay stays the year round, and during the winter as well as summer the red bird and some other kinds are frequently seen. In summer the tree black bird, the robin, the cat bird, the rain crow, or cuckoo, and the wren are abundant, and make their nests. In addition to these, the brown thrush, the mocking bird, the red-head woodpecker, the red-head flicker, the sap-sucker, and other kinds are often seen, some of them daily.

Now, which of all these birds has been affected by the sparrow? Not a single one of them. They are all as abundant as they were five years ago, or at any time in the past, and much more so than they were ten to twenty years ago, before there were as many trees as there are now.

In addition to the birds mentioned, I might name three others. The town martin has always been in the city in great numbers, making their nests in all kinds of cavities around the houses in the business part of the city. These same places were taken possession of by the sparrows; and they being here the year round, and making nests even in the winter time, the places belonging to the martins were appropriated before their arrival, and when they came they had to fight to recover them. I was much interested in watching one of these fights. Across the roof of a one-story building next to my office, and in the top of the adjoining building, a martin had found a hole, and had appropriated a place within for a nest. A sparrow had also afterwards done the same, and was found in possession when the martin arrived from its winter pilgrimage. The latter at once gave fight, and time and again during their fight they would fall to the roof below, and were so intently engaged that more than once I had my hand almost upon them before they would let go of each other. The martin won the fight, and the sparrow gave up the nest it had taken.

As I now sit in my yard the martins are circling overhead by the hundred, they staying during the day in the business part of the city. It is very evident that the sparrows have not run the martins out, although they are direct competitors for the same nesting places.

Years ago the chippee always made its nests in my yard, but has not done so for six years, except in one case, and that nest was abandoned without being completed. I do not know the reason; I imagine the English sparrow domineers over the little

chipping sparrow, but still the latter quit nesting in my yard before the former commenced.

I put up boxes which were formerly occupied by bluebirds. As soon as the sparrows nested in my yard they took possession of these boxes; and when the blue birds came they did not have the grit or strength to turn the intruders out, and they went elsewhere to nest. After nesting time they are seldom seen in the city during the summer. Very clearly the sparrows have driven the blue birds out of this part of the city, and possibly the chippees; but if they have affected any other kinds, my obervation has not been keen enough to detect it, though I have had my attention directed to it for years. F. A. SAMPSON.

Sedalia, Mo., July 25.

On Maya Chronology.

IN a former communication, answering Professor Cyrus Thomas's "Brief Study of the Palenque Tablet," I stated that the theory brought forward by Professor Förstemann, that the Dresden Codex does not count the days from the first of the given month but from the last of the preceding month, is to be put aside. Professor Förstemann's theory is based on the supposition that the calendar system of the Dresden Codex was the same as that which prevailed in Yucatan at the time of Bishop Landa's writing. This supposition, however, is an erroneous one. In the "Zeitschrift für Ethnologie," Vol. XXIII., I have shown that the priests who wrote down the Dresden Codex did not begin their years with the signs *kan, muluc, ix, cauac,* as in Landa's time, but with the signs *been, e'tznab, akbal, lamat,* exactly corresponding to the signs used by the Mexicans to designate their respective years. Beginning the years in this manner, the day 4 *ahau*, 8 *cumku*, is really the eighth day of the month *cumku* in the *been* or "cane" years, and conformingly all the other dates throughout the whole Dresden Codex.

I wish to call attention to a passage of the Chilam Balam of Mani which seems to confirm my opinion. It is said there (Brinton, Maya Chronicles, p. 98): "In the Katun, 13 *Ahau,* Ahpula died. It was in the course of the sixth year before the ending of the katun, as the counting of the years was in the east, and (the year) 4 *Kan* seated upon the throne, on the 18th day of (the month) *Zip,* on the day 9 *Fruix,* Ahpula died." Now it occurs only when beginning the count with the first day of the month, that a day 9 *Fruix* is the 18th day of the month *Zip.* And, indeed, in the year that begins with the day 4 *Kan,* the day 9 *Fruix* is the 18th day of the month *Zip* — beginning the count with the first.

Here, therefore, we have the same designation of a date by the sign of the day and the position it holds in the number of twenty, or a Maya month, as in the Dresden Codex. It seems scarcely probable that the natural manner of counting seen in the passage of the Chilam Balam, quoted above, should be replaced in the Dresden Codex by another and wholly unintelligible one.

DR. ED. SELER.

Steglitz, July 24, 1892.

The Palenque Tablet.

ALLOW me to say in reply to Dr. Seler that I did not "follow Dr. Förstemann" in regard to the peculiar method of counting days in the Dresden Codex. I had discovered this peculiarity before I was aware that anyone else had noticed it, and have now an unpublished article on the series, — Pls. 46–50, — based on that method, which was prepared some time ago. While at work on this paper the thought occurred to me that the series might be based, as Dr. Seler supposes, on a calendar in which the years commenced with *Been, Ezanab, Akbal, and Lamat,* and a table was prepared on this theory.

I quote from that paper my reply to the suggestion. After noting the fact that the count began with the last day of the month, I remark, "It might be argued from this that the years and months began with what have been considered the last days, but for the fact that all the historical evidence is against such a conclusion, and, as can be shown, a full and complete explanation of this series can be given without resorting to this theory."

There are also some difficulties in the way of this theory. Pushing back the series one day is a very simple process; but it will sometimes throw dates in the five added days which do not belong there, and would break the continuity of the Katunes and cycles. Moreover, I think this custom of counting from the last day of the month will explain the reason for commencing the numbering of the Katunes with 13.

I think it quite probable that, if Dr. Seler will attempt to trace out on his theory the three long series on Plates 46–50, each running through 104 years, he will find that it will fail to work. If not, then it is immaterial, except as regards the succession of the epochs, whether we count the commencing days the last or first of the month.

As this theory is wholly unnecessary to explain the peculiarities of this Codex, and as Plates 25–28 appear to be based on the method of counting from the last day of the month, I see no good reason for adopting it.

Dr. Seler thinks my statement that day-numbers were not attached to month-symbols on Plates 48 and 50 of the Dresden Codex when the number was 20, is erroneous, and calls attention to certain characters which he believes are symbols for this number. The little characters he alludes to are certainly present, and, as they are not parts of the month characters, may be intended to denote the fact that the month is completed. But it is difficult to explain on his supposition the fact that the symbol on Plate 48 to which this sign is attached is that of the month *Yax,* when the date is 11 *Eb,* the twentieth day of *Chen;* and one of those on Plate 50 is the symbol for the month *Pop,* when the date is 11 *Ik,* the twentieth day of *Cumhu.* In other words, the symbol in each case is of the month following and not that to which the twenty days apply. His explanation therefore fails to solve the difficulty, and cannot as yet be accepted as fully satisfactory; nevertheless, it must be admitted that these added characters have some reference to the completion of the month.

His interpretation of the open-hand symbol by *pax,* "to beat," appears to be erroneous, as there is nothing connected with it representing the phonetic element *p.* CYRUS THOMAS.

Smithsonian Institution, Washington, D.C.

BOOK-REVIEWS.

On the Modification of Organisms. By DAVID SYME. Melbourne, George Robertson & Co. 8°.

ON account of the many questions dealt with in this book, it is difficult to do justice to its contents within our limits. The prime object of Mr. Syme's clearly-written and forcible work is to show the falsity of the theory of natural selection, and to present another hypothesis to explain the cause of the modification of organisms. The greater part of the volume is taken up with criticisms of Darwin's statements and method of exposition, and the author's ideas as to the true cause of modifications are not brought forward till near the close of the work.

They are embodied in what may be styled the doctrine of "cellular intelligence." "The cell is the biological unit," Mr. Syme asserts. "It is the irreducible vital entity; it is the seat of life and energy; it is the key that unlocks the mystery of organic modifications" (p. 142). But it is more than this. It is the element which "feels, thinks, and wills" (p. 144). In other words, it is intelligent.

Startling as this doctrine is, the author does not hesitate to claim for it a wide application. In the movements of the stamens and pistils of flowers, the selection of grains of sand by rhizopods, and the healing of wounds, he sees the operation of this "cellular intelligence."

Modifications of organisms are brought about by the stimulating influence of external conditions. "These conditions, if uniform, pronounced, and prolonged, will, according to their nature, invariably incite the organism to change in a definite direction." Mr. Syme holds that modifications result from the action of the organism itself and not from any direct influence of environment. Hence he rejects the terms "use" and "disuse," which mean only "function and its absence," and prefers to say that modifica-